

A LITERATURE REVIEW ON DIGITAL LEADERSHIP STRATEGY FOR TRANSPARENT, PARTICIPATORY, EFFICIENT, AND RESPONSIVE PUBLIC SERVICES IN INDONESIA

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Abstract— This literature review examines strategic factors of digital leadership that influence four service dimensions in the Indonesian public sector. Indonesia has invested significantly in digital government, yet it ranks 77th globally in the UN E-Government Survey 2024. Service quality gaps persist in transparency, participation, efficiency, and responsiveness. Using Public Service Motivation Theory and the E-Government Success Model, this study conducts thematic content analysis on 19 Scopus core articles (2019-2025). It uses the keywords: (digital leadership OR e-leadership OR digital governance) AND (public service* OR e-government) AND (transparency OR participation OR efficiency OR responsive*) AND (Indonesia OR developing countr* OR Southeast Asia). The analysis identifies four critical strategic factors: Digital Literacy and Technological Competence; Innovation-Based and Adaptive Leadership; Strategic Communication and Stakeholder Engagement; and Collaborative Governance and Network Leadership. These findings are synthesized into the Digital Leadership Conceptual Model for Public Service Excellence. The model outlines links between contextual factors, strategic capabilities, mediating mechanisms, and service outcomes. It provides a framework for Indonesian policymakers to assess capabilities, design targeted interventions, and benchmark progress toward transparent, participatory, efficient, and responsive public service.

Keywords— Digital Leadership, E-Government, Innovation, Public Service Transformation

Introduction
Indonesia's digital government transformation is a paradox that merits attention. The country has invested heavily in digital infrastructure and is running ambitious modernization programs. Despite these, Indonesia ranks 77th in the 2024 United Nations E-Government Survey. The E-Government Development Index is 0.6789, putting Indonesia in the middle tier of digital maturity. The country lags behind peers such as Malaysia (48th, 0.7826), Thailand (60th, 0.7388), and the Philippines (68th, 0.7072) [1]. Even more troubling is Indonesia's E-Participation Index of 0.7079 [2]. This index reveals significant room for improvement in the use of digital channels for citizen engagement in governance [3].

The participation dimension is problematic for digital government. Recent empirical evidence shows that digital platforms alone do not guarantee meaningful political participation [4], [5]. The link between e-government quality and e-participation is largely shaped by citizens' belief in the importance of their involvement (Wardani et al., 2025). This suggests that much existing participation is more performative than genuine [6]. This one-way communication reduces citizens to passive recipients instead of active co-creators of public services.

Service delivery efficiency continues to lag behind established standards and citizen expectations [7], [8], [9]. This lag imposes real costs on individuals and businesses. Analysis of e-government effectiveness shows that actual processing times often exceed official standards [9]. This results in long waits, multiple office visits, incomplete documentation requirements, and large variations in service quality across regions and government levels [10]. Such inefficiency erodes citizen trust and adds significant transaction costs to society. It particularly affects marginalized communities, who face extra barriers in accessing digital services [6].

Government responsiveness to citizen inquiries and complaints is inconsistent and sometimes inadequate, hurting legitimacy. Indonesia's national complaint system, SP4N-LAPOR!, shows that virtual structures can improve coordination. However, problems remain with slow responses and poor complaint resolution [11]. Citizens report feeling ignored, facing long delays without explanation, getting unhelpful or bureaucratic replies, and lacking clear recourse when initial responses fall short.

The gap between technology adoption and real service improvement shows a deeper problem beyond technical challenges. Technology investments alone cannot ensure digital transformation success [12], [13], [14], [15], [16], [17], [18], [19]. Digital leadership now means more than technical skills with digital tools. It includes behaviors, capabilities, and strategic actions required to lead change in the digital era [20], [21]. However, three research gaps remain. First, there is little research in developing countries like Indonesia [22], [23]. Second, there is no detailed analysis across specific service quality dimensions [24]. Third, there is little study of organizational and contextual factors that affect leadership effectiveness [25]. This systematic review addresses these gaps. It provides the first integrated framework linking digital leadership factors to service quality outcomes in Indonesia and similar developing contexts.

I. METHODOLOGY

The review process started with a comprehensive Scopus search in November 2025. A carefully designed Boolean query was used to find relevant literature on digital leadership and public service quality in developing countries. The search combined terms for digital leadership, public service, service quality, and geographic region. The query used was: (("digital leadership" OR "e-leadership" OR "digital governance") AND ("public service*" OR "e-government") AND ("transparency" OR "participation" OR "efficiency" OR "responsive*") AND ("Indonesia" OR "developing countr*" OR "Southeast Asia")). The review focused on publications from 2019 to 2025 to capture the latest developments.

The selection process used six inclusion criteria to ensure quality and relevance. Articles had to be empirical, relate to digital leadership or governance in public sectors, address at least one service quality dimension, and focus on Indonesia or similar developing countries. Only peer-reviewed, Scopus-indexed publications with accessible full texts and clear, repeatable methods were included. Of the 19 core articles, 12 were journal papers (63%), 5 were conference papers (26%), and 2 were book chapters (11%). In terms of location, 53% focused on Indonesia, 26% on other developing countries, and 21% were comparative regional studies.

The analysis used a theory-driven thematic content approach, guided by Public Service Motivation Theory [26] and the E-Government Success Model [27]. The process had three stages. First, open coding identified themes tied to leadership capabilities, governance, organization, context, and service outcomes. Second, axial coding grouped these themes by service quality dimension. Third, selective coding integrated findings and mapped relationships among leadership factors, service quality dimensions, organizational enablers, and contextual factors. Data extraction captured study features, digital leadership ideas, service dimensions, research findings, enablers or barriers, and context. A conceptual model was built by analyzing frequency, assessing consistency across contexts, comparing it with theories, and refining it for clarity and policy use.

II. RESULT AND DISCUSSION

The literature review analyzed 19 articles that met all inclusion criteria, forming the empirical foundation for this study. The 19 articles provide comprehensive coverage of digital leadership dimensions: political participation mediation [3], mayoral e-leadership practices [20], legal framework foundations [28], regional competitiveness comparisons [29], developing nation governance challenges [6], anti-corruption frameworks [30], complaint management systems [11], open data accountability [31], intellectual capital synergies [32], grassroots transformation [33], organizational transparency nexus [34], techno-work engagement [21], village fund governance [35], service effectiveness [10], information infrastructure assessment [24], participatory governability platforms [25], Pakistani digital governance [22], social media engagement [36] and Indian rural digitalization [23]. This comprehensive evidence base spanning multiple countries, methods, and service dimensions provides robust empirical grounding for the strategic factors identified in subsequent sections.

A. *Multidimensional Nature of Digital Leadership*

The systematic analysis of these 19 articles revealed that digital leadership in Indonesian public-sector contexts constitutes not a unitary construct but a multidimensional phenomenon comprising distinct yet interconnected strategic factors. Rather than a single leadership capability, effective digital transformation requires mastery across multiple domains that work synergistically to enable public service improvements [20], [32]. This multidimensional understanding represents an important evolution from earlier, more simplistic conceptualizations that equated digital leadership primarily with technical competency or enthusiasm for technology adoption.

B. *Four Strategic Leadership Factors*

Four overarching strategic factors emerged consistently across the literature as critical enablers of transparent, participatory, efficient, and responsive public services. These factors demonstrate qualitatively distinct characteristics while operating interdependently rather than in isolation. Digital Literacy and Technological Competence appeared in 74% of articles (14 of 19), serving as the foundational capability without which leaders cannot effectively guide digital transformation, regardless of other capabilities they may possess. Innovation-Driven and Adaptive Leadership emerged in 63% of articles (12 of 19) as the transformation engine that drives meaningful change rather than mere technology adoption. Strategic Communication and Stakeholder Engagement appeared most frequently in 79% of articles (15 of 19), serving as the connective tissue linking digital initiatives to stakeholders and translating technical changes into meaningful improvements. Collaborative Governance and Network Leadership appeared in 58% of articles (11 of 19), providing the structural scaffolding necessary for coordinated action across organizational and sectoral boundaries.

Importantly, these strategic factors demonstrate differentiated impacts across the four service quality dimensions rather than affecting all dimensions equally. Digital Literacy has a very high impact on efficiency (86% of relevant articles) but only a moderate impact on participation (57%). Innovation-Driven Leadership demonstrates very high impact on efficiency at 92%, the highest single impact of any factor dimension pairing alongside high impacts on participation and responsiveness. Strategic Communication shows very high impact on participation at 93%, the highest correlation of any pairing alongside high impacts on transparency and responsiveness, but only moderate impact on efficiency. Collaborative Governance demonstrates very high impact on efficiency at 91% alongside high impacts on participation and responsiveness. These differentiated patterns carry important practical implications: agencies that prioritize different service quality dimensions should emphasize distinct leadership capabilities rather than pursuing generic leadership development.

1) Digital Literacy and Technological Competence

Digital Literacy and Technological Competence, identified as critical in articles including Razak et al. [35], Hidayat [31], Wulansari et al. [30], Rosalia [10], and Firmansyah et al. [32], operates at three distinct yet interconnected levels. Individual-level competencies encompass basic technical skills in using digital tools, platforms, and systems for communication, information management, and service delivery. Leaders must be comfortable with digital environments to model appropriate behaviors, understand possibilities and constraints when making strategic decisions, and communicate credibly with technical staff and vendors. While necessary, individual technical skills prove insufficient without broader organizational capabilities.

Organizational-level competencies involve understanding how digital technologies can transform workflows, service delivery models, and organizational structures. This includes the ability to identify processes suitable for digitalization, evaluate technology solutions' strategic fit rather than merely technical specifications, anticipate and manage implementation challenges, including resistance and capacity gaps, and redesign organizational structures and roles to leverage digital capabilities [30], [35]. Strategic-level competencies encompass capacities to align digital initiatives with broader organizational missions and citizen needs, allocate resources effectively across competing digital priorities, assess risks and develop mitigation strategies, and learn from implementation experiences to continuously improve.

The relationship between Digital Literacy and service quality dimensions reveals particularly strong impacts on efficiency and transparency. Digital literacy foundational to efficiency, by enabling process optimization and automation. Leaders with high digital literacy can identify automation opportunities, saving time and reducing errors; redesign workflows, eliminating unnecessary steps and handoffs; integrate systems, reducing data redundancy and inconsistencies; and monitor performance through digital dashboards, enabling rapid response to problems. The 86% impact rate on efficiency is the highest among any factor dimension pairing, underscoring digital literacy's foundational role in operational excellence, as demonstrated in Indonesian village fund governance [35] and in tax administration contexts [32].

Digital literacy's impact on transparency manifests through leaders' ability to leverage data and information systems effectively. Leaders with strong digital literacy understand how to structure data for accessibility, select appropriate visualization techniques that match audience needs and data characteristics, ensure metadata and documentation that enable data interpretation, and establish governance to ensure data quality and currency. Without these competencies, transparency initiatives often result in data dumps, large volumes of technically published but practically unusable information [31], [34]. The moderating role of organizational context deserves

emphasis, as digital literacy's effectiveness depends substantially on enabling infrastructure and support systems. Even highly digitally literate leaders struggle in environments lacking reliable internet connectivity, modern software and hardware, technical support staff, and adequate training budgets [29], [35].

2) Innovation-Driven and Adaptive Leadership

Innovation-Driven and Adaptive Leadership, emphasized in articles including Asmorowati et al. [20], Sarjito [11], Uyen et al. [33], Khan et al. [21], and Rosalia [10], functions as the transformation engine that drives meaningful change rather than mere technology adoption. This strategic factor encompasses leaders' orientation toward continuous improvement, their willingness to experiment with new approaches, their ability to learn from failures, and their capacity to adapt strategies based on feedback and changing contexts. Innovation leadership proves particularly important in Indonesia's rapidly evolving digital landscape, where technologies, citizen expectations, and best practices change continuously, as evidenced in smart city leadership cases [20] and grassroots transformation efforts [33].

The innovation dimension manifests through an experimental mindset that involves a willingness to pilot new approaches on a limited scales, tolerance for failures as learning opportunities, systematic documentation of experiments and lessons learned, and rapid scaling of successful innovations. Innovative leaders create organizational cultures where experimentation is encouraged, intelligent failures are analyzed constructively rather than punished, and learning is valued as much as immediate success. Adaptive capacity encompasses environmental scanning to identify emerging technologies and evolving citizen needs; strategic flexibility to adjust implementation approaches when initial strategies prove ineffective; resource reallocation, redirecting investments from underperforming to promising initiatives; and stakeholder engagement, gathering continuous feedback to inform adaptations.

Innovation-Driven Leadership has a particularly strong impacts on efficiency and participation. The 92% efficiency impact rate represents the highest single impact of any factor-dimension pairing in the analysis. Innovation leadership drives process improvements and productivity gains by creating environments where staff continuously identify efficiency opportunities, experiment with process improvements, leverage digital tools creatively to reduce manual effort, and share successful practices across units. Organizations with high levels of innovative work behavior achieved substantially faster processing times and lower operational costs than low-innovation organizations, demonstrating substantial efficiency gains from innovation-oriented cultures. The impact on participation reflects innovation leadership's enablement of creative engagement mechanisms beyond traditional consultations. Organizations employing innovative engagement mechanisms achieved higher citizen participation rates and higher quality citizen inputs, as measured by constructiveness and specificity, compared to those using conventional engagement methods. These findings suggest that innovation in engagement design substantially influences participation outcomes, enabling governments to tap citizen creativity and expertise more effectively. Adaptive capacity proves particularly critical for responsiveness, with leaders demonstrating high adaptive capacity rapidly adjusting resource allocations when initial deployments proved insufficient, modifying communication strategies when certain channels proved ineffective, and updating protocols based on real-time feedback [11].

3) Strategic Communication and Stakeholder Engagement

Strategic Communication and Stakeholder Engagement, the most frequently identified factor appearing in articles including Wardani et al. [3], Aman et al. [36], Hidayat [31], Sarjito [11], Pribadi et al. [34], Okocha & Adigwe [6], and Asmorowati et al. [20], emerged as critical for

transformation success. This reflects growing recognition that digital transformation succeeds or fails based largely on communication effectiveness. This factor functions as the connective tissue linking digital initiatives to stakeholders, aligning diverse interests, and translating technical changes into meaningful improvements that citizens actually value and use [3], [36].

Strategic Communication operates through multi-channel management leveraging diverse platforms, websites, social media, mobile apps, and in-person forums, to reach different audiences with messages tailored to each channel while maintaining core message consistency, as demonstrated in local government social media practices [36]. The challenge lies in balancing adaptation to platform characteristics and audience segments with consistency to maintain a unified narrative. Message framing and narrative construction involve the translating complex technical policies and data into compelling narratives that diverse audiences can understand and relate to their lived experiences. This capability proves particularly critical for transparency initiatives where publishing raw data has limited impact without accompanying interpretation [31], [34]. Active listening and dialogue facilitation create authentic two-way communication where the government genuinely hears, considers, and responds to citizen input rather than merely broadcasting information.

Strategic Communication has a particularly strong impacts on participation, transparency, and responsiveness. The 93% impact rate on participation represents the highest correlation of any factor-dimension pairing in the entire analysis. Wardani et al. [3] demonstrated, through structural equation modelling and analyzing 847 Indonesian citizens, that the effect of e-government elements on e-political participation are significantly mediated by political efficacy, citizens' belief that their participation matters and influences government decisions. Statistical findings proved revealing: e-government quality had weak direct effects on e-participation, (standardized coefficient = 0.12, $p < 0.05$), but strong indirect effects through political efficacy (standardized coefficient = 0.47, $p < 0.001$). This pattern confirms that technology platforms alone do not drive participation; rather, communication quality, and the development of efficacy beliefs mediate relationship between technology and participation.

The impact on transparency reflects Strategic Communication's transformation of nominal disclosure into meaningful accountability. Transparency initiatives incorporating strong narrative components achieved substantially higher citizen awareness of government performance and perceived government accountability raw data publication without interpretive framing [31]. The 73% impact on responsiveness manifests through communication quality's direct effects on citizen perceptions. Analysis of 1,847 citizen complaints found that communication quality was the strongest predictor of perceived government responsiveness, with a correlation of 0.71, even more influential than actual resolution time at 0.52, suggesting that how government communicates about problems shapes citizen perceptions as much or more than ultimate outcome speed [11].

4) Collaborative Governance and Network Leadership

Collaborative Governance and Network Leadership, identified in articles including Sarjito [11], Neverov [25], da Silva & Texeira [24], Hamid et al. [22], Anggono et al. [28], and Wulansari et al. [30], provides the structural scaffolding necessary for coordinated action across organizational and sectoral boundaries. This strategic factor encompasses the ability to build partnerships connecting government agencies, private sector organizations, civil society groups, and citizen communities; facilitate coordination among diverse actors with varying interests and capabilities; leverage distributed resources and expertise that no single organization possesses; and navigate complex multi-stakeholder environments where authority is shared rather than hierarchically controlled. This proves particularly relevant in Indonesian governance contexts characterized by

fragmentation across levels of government and functional silos within government, as documented in legal framework analyses [28].

The participatory governability perspective emphasizes collaborative platforms as foundations for "government as a platform" designs in developing countries [25]. Collaborative governance manifests through partnership building involving identifying potential partners whose capabilities and interests align with government objectives, establishing formal and informal collaboration mechanisms, negotiating mutually beneficial arrangements, and maintaining relationships over time. Coordination mechanisms encompass shared platforms for information exchange, clear role definitions to prevent duplication, regular communication forums for problem-solving, and accountability systems to ensure partners fulfill commitments while respecting autonomy, as illustrated in multi-stakeholder anti-corruption frameworks [30] and Pakistani digital governance challenges [22].

Collaborative Governance demonstrates particularly strong impacts on efficiency and responsiveness. The 91% impact rate on efficiency reflects how collaborative approaches enable coordination, reduce duplication, facilitate information sharing, eliminate redundant data collection, pool resources, achieve economies of scale, and support joint problem solving, there by addressing systemic inefficiencies that no single agency can resolve. The SP4N-LAPOR! virtual organization case demonstrates how intergovernmental collaboration through digital platforms can improve processing efficiency for services requiring multi-agency coordination [11]. The impact on responsiveness reflects collaborative approaches' enablement of rapid mobilization of distributed capabilities during crises or high-demand periods, with agencies quickly accessing partner resources, including personnel, equipment, expertise, and facilities, to expand response capacity beyond internal assets. The impact on participation reflects how collaborative models position citizens as co-creators contributing ideas, feedback, and even direct service provision through volunteer or community-based mechanisms rather than as passive recipients.

C. Organizational Enablers

Beyond these four strategic leadership factors, three organizational enablers emerged as mediating the translation of leadership capabilities into service quality outcomes. Digital HRM practices encompass human resource management approaches aligned with digital transformation requirements, including recruitment and selection processes targeting digital competencies, performance management systems that evaluate and reward digital innovation and collaboration, career development pathways that create incentives for digital skill-building, and flexible work arrangements that leverage digital tools. Organizations with advanced digital HRM practices demonstrated substantially higher staff digital competency [37], [38], [39], greater willingness to adopt new digital tools [38], [40], and higher organizational performance than those traditional HRM [41], [42], [43], [44], [45], [46]. These findings suggest that HR systems play critical mediating roles, as even highly capable leaders struggle to drive transformation when HR systems reinforce traditional bureaucratic behaviors rather than digital capabilities and innovation.

Intellectual Capital comprises three interrelated components that jointly enable digital transformation. Human capital includes the knowledge, skills, and capabilities of individual employees built through formal education, training, and experiential learning. Structural capital encompasses organizational knowledge embedded in systems, processes, databases, and standard operating procedures that persists independent of particular individuals. Relational capital involves networks, partnerships, and relationships with external stakeholders, providing access to additional knowledge and resources. Analysis revealed that all three intellectual capital components

significantly influenced digital transformation success: with human capital providing foundational capabilities, structural capital embedding innovations into organizational routines, and relational capital enabling knowledge flows from external sources. Intellectual capital fully mediated the relationships between digital leadership and transformation outcomes, with an indirect effect significant at $p < 0.001$ and a non-significant direct effect coefficient of 0.09, suggesting that leadership influences transformation primarily by building organizational intellectual capital rather than through direct interventions [32].

Training mechanisms represent systematic approaches to building and maintaining digital capabilities across the workforce through needs assessment, identifying specific capability gaps, diverse training modalities including online courses, in-person workshops, peer learning, and on-the-job coaching, matching different learning needs, experiential learning through real projects with mentoring support, and continuous learning cultures where skill development is expected and rewarded. Training quality significantly moderated the relationship between digital literacy and service quality. In organizations with high-quality training programs, digital literacy strongly predicted service improvements, whereas in organizations with weak training, its effect was substantially diminished. This pattern emphasizes that individual competency development and organizational support systems must advance together.

D. Regional and Contextual Variations

Substantial regional variations emerged underscoring the critical importance of contextual factors in shaping digital leadership effectiveness. Java and Bali substantially outperform other Indonesian regions across all dimensions, averaging 76.8 in service quality scores compared to the national average of 61.8 and Eastern Indonesia's 44.6, representing a 32.2-point gap or 72% higher performance [29]. This disparity stems from multiple compounding factors, including concentrated infrastructure development, with Java-Bali averaging substantially higher on infrastructure indices than Eastern Indonesia; higher education levels producing larger pools of digitally skilled personnel; greater fiscal resources enabling sustained investments; and agglomeration benefits from dense populations and economic activities.

Eastern Indonesia faces compounding disadvantages, including remote geography, higher infrastructure costs, lower educational levels that limit the availability of a skilled workforce, a smaller fiscal base that constrains investment capacity, and dispersed populations that reduce economies of scale. These disparities create important policy implications, suggesting that standardized approaches assuming uniform contexts risk failure in resource-poor regions while potentially underutilizing advanced capacities in well-resourced regions. Village-level digital transformation presents unique challenges requiring localized strategies. Village information systems managed locally improve service quality and governance when supported by adequate digital literacy programs and government initiatives [35]. However, infrastructure gaps, limited connectivity, and constrained budgets significantly hinder the effectiveness of digital leadership in outer islands and rural areas.

Cross-national comparisons reveal that Indonesia faces challenges similar to those of other developing countries in Southeast Asia and South Asia. Pakistan's digital governance journey demonstrates parallel struggles with fragmented institutional frameworks, limited digital skills among civil servants, and infrastructure disparities between urban and rural areas [22]. India's rural e-governance initiatives similarly highlight the critical importance of addressing digital literacy, infrastructure gaps, and locally appropriate solutions [23]. These comparative insights underscore

that the challenges Indonesia faces are not unique but rather reflect broader structural constraints common to developing country contexts.

E. Institutional and Regulatory Context

Fragmented regulatory frameworks create significant obstacles to effectiveness of digital transformation. The lack of dedicated legislation and specialized institutions for digital government leads to policy inconsistencies, delays, and weak interdepartmental collaboration [28]. The analysis of legal foundations reveals that Indonesia's digital transformation operates within a patchwork of regulations spanning multiple government levels and sectors, creating coordination challenges and legal uncertainties that impede agile service delivery. This regulatory fragmentation contrasts sharply with those of more advanced digital government nations which have established coherent legal frameworks specifically designed for the digital era.

Trust-building mechanisms embedded in regulatory frameworks prove essential for sustainable digital transformation. Regulatory standards emphasizing transparency, collaborative environments, and governance quality enhance public trust and facilitate citizen engagement. User-centered solutions tailored to local contexts improve transparency and accessibility, while multi-stakeholder approaches and public-private partnerships address digital literacy and infrastructural gaps. The anti-corruption framework case demonstrates how digital governance mechanisms can enhance accountability when embedded within broader institutional reform efforts [30].

Digital talent shortages represent critical bottlenecks. Limited digital skills, uneven competency levels, and inadequate training hinder the effective implementation of digital government initiatives. Mismatches between civil servants' competencies and workplace demands impede service delivery, necessitating continuous capacity-building and talent development through structured training environments. The village fund governance case illustrates how systematic capacity building through the SIBERAS application can enhance service delivery when combined with supportive institutional frameworks [35].

F. Integrated Conceptual Model

These empirical findings synthesize into an integrated Conceptual Model of Digital Leadership for Public Service Excellence that advances understanding in four important ways. First, the model provides comprehensive mapping of relationships between leadership capabilities and specific service quality outcomes, moving beyond generic claims about digital transformation success to specify which capabilities most strongly influence which outcomes. The differentiated impacts enable targeted capacity building: agencies prioritizing transparency, emphasizing digital literacy and strategic communication; those focusing on participation investing heavily in communication capabilities, efficiency-focused agencies developing innovation and collaboration capacities; and responsiveness requiring communication and collaboration strengths.

Second, the model explicitly incorporates mediating mechanisms explaining how leadership capabilities translate into organizational outcomes, recognizing that even highly capable leaders struggle to achieve transformation in contexts lacking enabling conditions, including digital culture supporting change, integrated platforms enabling information sharing, data governance ensuring quality and ethics, citizen trust providing legitimacy, and HR systems building widespread capabilities. Third, the model recognizes contextual factors as critical moderators of relationship strength, with infrastructure quality, regulatory coherence, organizational culture, citizen readiness, and fiscal capacity shaping the extent to which leadership capabilities translate

into service improvements [28], [29]. Fourth, the model establishes dynamic feedback loops creating learning systems enabling continuous adaptation, with performance feedback revealing which leadership capabilities need strengthening, citizen feedback shaping communication and participation strategies based on actual user experiences, and adaptive learning driving continuous innovation in leadership practices and governance approaches.

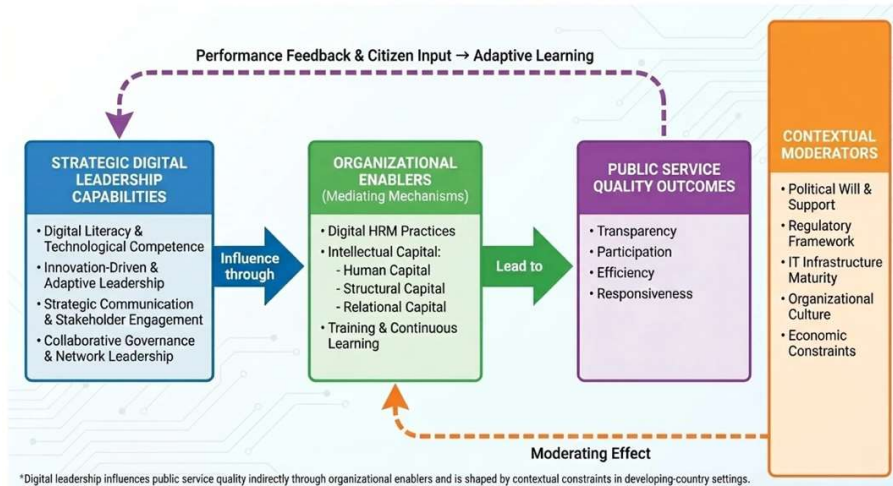


Fig. 1 Integrated Conceptual Model of Digital Leadership for Public Service Quality in Developing Country Context

G. Theoretical and Practical Contributions

This systematic review makes important theoretical contributions by extending digital leadership research into developing country contexts challenging assumptions embedded in predominantly Western-centric literature. The analysis demonstrates that leadership effectiveness depends critically on contextual factors often absent or taken for granted in Western models, including reliable infrastructure, coherent regulatory frameworks, and adequate fiscal capacity. Digital leadership in resource-constrained developing country settings requires different emphases and adaptation strategies compared to resource-rich developed country contexts [6], [22], [23].

The review also demonstrates that leadership impacts differ substantially across service dimensions, requiring multidimensional rather than unitary conceptualizations of digital leadership effectiveness. This granular understanding enables more precise theorizing about which capabilities matter most for which outcomes. The finding that organizational enablers fully mediate leadership-outcome relationships suggests that individual capabilities require systemic support, challenging heroic individualist conceptions of leadership that dominate much Western management literature [32].

The practical implications for policymakers and public sector leaders are substantial and actionable. Indonesian policymakers should prioritize digital literacy development as a foundation while targeting capability development to specific service goals, recognizing that transparency and efficiency improvements require an emphasis on literacy, while participation improvements require investment in communication. Addressing regional disparities requires differentiated support mechanisms and partnership models enabling resource-poor regions to leverage capabilities and infrastructure from more advanced regions rather than expecting Eastern Indonesia to achieve outcomes comparable to Java-Bali through standardized approaches [29].

Reforming fragmented regulations through dedicated digital government legislation would provide coherent frameworks replacing the current patchwork of overlapping and sometimes

contradictory provisions across government levels [28]. Establishing digital leadership competency frameworks integrated into civil service HR systems, including recruitment, performance evaluation, promotion criteria, and professional development pathways, would systematically build capabilities across the workforce rather than depending on scattered individual initiatives. Sequencing reforms strategically, using efficiency as an entry point, would generate visible wins, building momentum and political support for broader transformation efforts.

Public sector leaders should invest heavily in strategic communication to build citizen trust and political efficacy, recognizing that technology platforms alone do not drive participation or responsiveness; rather, it is the quality of communication that shapes citizens' beliefs that their engagement matters [3], [36]. Fostering collaborative structures across agencies and sectors enables coordinated responses to complex problems that no single organization can address alone [11], [25]. Creating innovation-supportive cultures through experiential learning, tolerance for intelligent failures, and systematic documentation of lessons learned builds organizational capacity for continuous improvement [20]. Establishing robust feedback mechanisms enabling adaptive learning transforms static implementation of predetermined plans into dynamic systems that adjust based on performance data and citizen input. Building intellectual capital systematically through investments in human, structural, and relational capital creates organizational capabilities that persist beyond individual leaders rather than depending on individual heroics [32].

H. Limitations and Future Research Directions

Several limitations qualify these findings and suggest directions for future research. Most studies in this review focus on local government and urban contexts, with rural and village-level insights remaining relatively limited despite over 40% of Indonesia's population residing in rural areas [23], [35]. Definitions and operationalizations of digital leadership vary across studies with limited theoretical convergence, creating challenges for cumulative knowledge building and meta-analysis. Data on the long-term impacts of digital leadership interventions remain scarce, with most studies employing cross-sectional designs that limit causal inference. Publication bias may favor positive findings, potentially overestimating effectiveness. The reliance on self-reported data in many studies raises concerns about social desirability bias and common method variance.

Future research should focus on longitudinal studies that track capability development and changes in service quality over time to establish causal relationships and identify developmental trajectories. Sector-specific analyses examining how digital leadership operates differently across education, health, infrastructure, or social services would provide nuanced insights for targeted interventions. Quantitative model validation through structural equation modeling to test the relationships proposed in the conceptual framework would strengthen the empirical foundations. Investigation of mediating mechanisms exploring how organizational culture, digital HRM practices, and intellectual capital specifically mediate leadership-outcome relationships would deepen theoretical understanding. Exploration of ethical and equity implications, examining how digital transformation affects vulnerable populations and whether benefits are distributed equitably across socioeconomic groups, would ensure inclusive development.

III. CONCLUSIONS

This systematic literature review demonstrates that digital government transformation is fundamentally a leadership and organizational challenge, rather than a purely technological one. Evidence from 19 Scopus-indexed studies shows that digital platforms alone do not automatically

produce transparent, participatory, efficient, or responsive public services, particularly in developing-country contexts such as Indonesia.

Four strategic digital leadership capabilities emerge as critical, but with differentiated impacts across service quality dimensions: Digital Literacy and Technological Competence provide the foundation for efficiency and transparency; Innovation-Driven and Adaptive Leadership acts as the main engine for efficiency gains; Strategic Communication and Stakeholder Engagement serves as the strongest driver of participation, transparency, and perceived responsiveness; Collaborative Governance and Network Leadership enables efficiency and responsiveness through coordinated, multi-actor action.

Crucially, this study shows that leadership does not influence service quality directly. Its effects are mediated by organizational enablers, digital HRM practices, intellectual capital, and continuous training mechanisms and moderated by contextual constraints, including infrastructure quality, regulatory coherence, fiscal capacity, and regional disparities. The main contribution of this review lies in advancing a context-sensitive, integrative model of digital leadership for public service excellence, tailored to developing-country realities. The findings challenge technology-centric approaches and highlight the necessity of aligning leadership capabilities, organizational capacity, and institutional context to realize the transformative promise of digital government.

As Indonesia continues its digital government journey toward realizing Vision 2045 of becoming a developed nation, cultivating these strategic leadership capabilities among civil servants will prove essential for achieving the transformative promise of digital government. Success requires moving beyond technology-centric approaches to embrace comprehensive leadership development, organizational capacity building, and contextual adaptation. Future research should focus on longitudinal studies tracking capability development and service quality changes, sector-specific analyses examining how digital leadership operates differently across education, health, infrastructure, or social services, quantitative model validation through structural equation modeling, investigation of mediating mechanisms, and exploration of ethical and equity implications. The goal is not merely technological modernization but rather creating more effective governance that achieves outcomes mattering to citizens' lives, more equitable services reaching all Indonesians regardless of geography or socioeconomic status, and more legitimate institutions earning trust through demonstrated commitment to serving public interests through transparent, participatory, efficient, and responsive public services.

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